



**MULTIMEDIA AND SCENT STORAGE CARTRIDGE DESIGN HAVING
ELECTROSTATIC SCENT RELEASE AND METHODS FOR USING SAME**

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CLAIMS

1. A scent- and multimedia-bearing card for use with a separate scent release and multimedia playback system, the scent- and multimedia-bearing card comprising:

a scent storage medium for storing at least one scent; and

10 an encapsulated multimedia storage medium for storing multimedia information.

2. The scent- and multimedia-bearing card of claim 1 wherein the scent storage medium comprises:

a housing;

a scent storage reservoir contained in the housing; and

15 a scent release unit connected to the scent storage reservoir for releasing scent from the scent- and multimedia-bearing card.

3. The scent- and multimedia-bearing card of claim 2 wherein the scent release unit comprises:

a scent release chamber for containing scent just prior to release; and

20 a tube connecting the scent reservoir to the scent chamber.

4. The scent- and multimedia-bearing card of claim 3 wherein the scent release chamber comprises a three-dimensional region enclosed on all sides except having a scent release opening facing upwards for releasing scent from the scent release chamber, and wherein the scent release unit further comprises:

25 a cover for covering the scent release opening, wherein the cover is moveable between at least two positions, a first position wherein the scent release opening is

substantially sealed thereby preventing scent from escaping from the scent release chamber, and a second position, wherein the cover is displaced from the opening in the scent release chamber, wherein the displacement of the cover permits scent to escape from the scent release chamber during scent release operations.

- 5 5. The scent- and multimedia-bearing card of claim 4 wherein the cover is made from electromagnetic material and wherein the scent release unit further comprises:
- an electromagnetic mechanism means for moving the cover from the first position to the second position; and

 electromagnetic control means for controlling the operation of the
10 electromagnetic mechanism means.

6. The scent- and multimedia-bearing card of claim 5 wherein the electromagnetic control means further comprises:

 wiring for receiving control signals from the scent release and multimedia
 playback system, the control signals controlling the operation of the electromagnetic
15 mechanism means.

7. The scent- and multimedia-bearing card of claim 5 further comprising:

 a spring connecting the cover to the scent release unit, wherein the spring
 maintains the cover in the first, closed position until the electromagnetic mechanism
 means is energized, when the cover moves to the open, second position, and wherein the
20 spring returns the cover to the closed position after the electromagnetic mechanism
 means is de-energized.

8. The scent- and multimedia-bearing card of claim 7 wherein the spring comprises a spiral spring.

9. The scent- and multimedia-bearing card of claim 5 wherein the scent release unit further comprises:

a hinge connecting the cover to the scent release unit, whereby the cover can rotate about the hinge while opening and closing; and

5 a leaf spring cooperating with the hinge to return the cover to a closed position when the electromagnetic mechanism means is not energized.

10. The scent- and multimedia-bearing card of claim 2 wherein the scent release unit further comprises:

electrostatic scent release apparatus for ionizing scent in the scent release unit.

10 11. The scent- and multimedia-bearing card of claim 10 wherein the electrostatic scent release apparatus further comprises:

corona discharge pin for creating corona discharge to ionize scent; and

wiring for connecting the corona discharge pin to an external voltage source.

12. The scent- and multimedia-bearing card of claim 11 wherein the electrostatic
15 scent release apparatus further comprises:

a grid opposite from the corona discharge pin for attracting ionized scent molecules to assist in the scent release process; and

wiring for connecting the grid to a ground or an external voltage source with a opposite charge to the corona discharge pin.

20 13. The grid opposite from the corona discharge pin of claim 12 wherein the opposite charged grid further neutralize the ionized scent molecules to assist in the scent release process.

14. The scent-bearing card of claim 11 wherein the electrostatic scent release apparatus further comprises:

a shield surround the corona discharge pin for focusing ionized scent molecules to assist in the scent release process; and

5 wiring for connecting the shield to a ground or an external voltage source with a same charge as the corona discharge pin.

15. The corona discharge pin for creating corona discharge to ionize scent of claim 11 wherein the discharge pin is constructed with needle or capillary tube.

16. The corona discharge needle or capillary tube of claim 15 wherein the discharge
10 needle or capillary tube is made by conductive materials.

17. The corona discharge needle or capillary tube of claim 15 wherein the discharge needle or capillary tube is made by nonconductive materials.

18. The scent- and multimedia-bearing card of claim 5 wherein the scent release unit further comprises:

15 electrostatic scent release apparatus for ionizing scent in the scent release unit.

19. The scent- and multimedia-bearing card of claim 18 wherein the electrostatic scent release apparatus further comprises:

corona discharge pin for creating corona discharge to ionize scent; and

wiring for connecting the corona discharge pin to an external voltage source.

20 20. The scent- and multimedia-bearing card of claim 19 wherein the cover and electromagnetic mechanism means are coated in epoxy or high voltage insulation materials, wherein the epoxy or high voltage insulation materials protects the cover and electromagnetic mechanism means during corona discharge.

21. The scent- and multimedia-bearing card of claim 19 wherein the electrostatic scent release apparatus further comprises:

a grid opposite from the corona discharge pin for attracting ionized scent molecules to assist in the scent release process; and

5 wiring for connecting the grid to a ground or an external voltage source with a opposite charge to the corona discharge pin.

22. The grid opposite from the corona discharge pin of claim 21 wherein the opposite charged grid further neutralize the ionized scent molecules to assist in the scent release process.

10 23. The scent-bearing card of claim 19 wherein the electrostatic scent release apparatus further comprises:

a shield surround the corona discharge pin for focusing ionized scent molecules to assist in the scent release process; and

15 wiring for connecting the shield to a ground or an external voltage source with a same charge as the corona discharge pin.

24. The corona discharge pin for creating corona discharge to ionize scent of claim 19 wherein the discharge pin is constructed with needle or capillary tube.

25. The corona discharge needle or capillary tube of claim 24 wherein the discharge needle or capillary tube is made by conductive materials.

20 26. The corona discharge needle or capillary tube of claim 24 wherein the discharge needle or capillary tube is made by nonconductive materials.

27. A scent-bearing card for use with a separate scent release and multimedia playback system to create an immersive multimedia experience comprised of olfactory and visual or sound elements, the scent-bearing card comprising:

a scent storage medium for storing at least one scent; and
5 scent release control information for use by the scent release and multimedia playback system in controlling scent release from the scent-bearing card.

28. The scent-bearing card of claim 27 wherein the scent storage medium comprises:

a housing;
a scent storage reservoir contained in the housing; and
10 a scent release unit connected to the scent storage reservoir for releasing scent from the scent-bearing card.

29. The scent-bearing card of claim 28 wherein the scent release unit comprises:

a scent release chamber for containing scent just prior to release; and
a tube connecting the scent reservoir to the scent release chamber.

15 30. The scent-bearing card of claim 29 wherein the scent release chamber comprises a three dimensional region enclosed on all sides except having a scent release opening facing upwards for releasing scent from the scent release chamber, and wherein the scent release unit further comprises:

a cover for covering the scent release opening, wherein the cover is moveable
20 between at least two positions, a first position wherein the scent release opening is substantially sealed thereby preventing scent from escaping from the scent release chamber, and a second position, wherein the cover is displaced from the opening in the scent release chamber, wherein the displacement of the cover permits scent to escape

from the scent release chamber during scent release operations.

31. The scent-bearing card of claim 30 wherein the cover is made from electromagnetic material and wherein the scent release unit further comprises:

an electromagnetic mechanism means for moving the cover from the first position
5 to the second position; and

electromagnetic control means for controlling the operation of the electromagnetic mechanism means.

32. The scent-bearing card of claim 31 wherein the electromagnetic control means further comprises:

10 wiring for receiving control signals from the scent release and multimedia playback system, the control signals controlling the operation of the electromagnetic mechanism means.

33. The scent-bearing card of claim 31 further comprising:

a spring connecting the cover to the scent release unit, wherein the spring
15 maintains the cover in the first, closed position until the electromagnetic mechanism means is energized, when the cover moves to the open, second position, and wherein the spring returns the cover to the closed position after the electromagnetic mechanism means is de-energized.

34. The scent-bearing card of claim 33 wherein the spring comprises a spiral spring.

20 35. The scent-bearing card of claim 31 wherein the scent release unit further comprises:

a hinge connecting the cover to the scent release unit, whereby the cover can rotate about the hinge while opening and closing; and

a leaf spring cooperating with the hinge to return the cover to a closed position when the electromagnetic mechanism means is not energized.

36. The scent-bearing card of claim 28 wherein the scent release unit further comprises:

5 electrostatic scent release apparatus for ionizing scent in the scent release unit.

37. The scent-bearing card of claim 36 wherein the electrostatic scent release apparatus further comprises:

corona discharge pin for creating corona discharge to ionize scent; and

wiring for connecting the corona discharge pin to an external voltage source.

10 38. The scent-bearing card of claim 37 wherein the electrostatic scent release apparatus further comprises:

a grid opposite from the corona discharge pin for attracting ionized scent molecules to assist in the scent release process; and

wiring for connecting the grid to a ground or an external voltage source with a

15 opposite charge to the corona discharge pin.

39. The grid opposite from the corona discharge pin of claim 38 wherein the opposite charged grid further neutralize the ionized scent molecules to assist in the scent release process.

40. The scent-bearing card of claim 37 wherein the electrostatic scent release

20 apparatus further comprises:

a shield surround the corona discharge pin for focusing ionized scent molecules to assist in the scent release process; and

wiring for connecting the shield to a ground or an external voltage source with a same charge as the corona discharge pin.

41. The corona discharge pin for creating corona discharge to ionize scent of claim 37 wherein the discharge pin is constructed with needle or capillary tube.

5 42. The corona discharge needle or capillary tube of claim 41 wherein the discharge needle or capillary tube is made by conductive materials.

43. The corona discharge needle or capillary tube of claim 41 wherein the discharge needle or capillary tube is made by nonconductive materials.

44. The scent-bearing card of claim 31 wherein the scent release unit further
10 comprises:

electrostatic scent release apparatus for ionizing scent in the scent release unit.

45. The scent-bearing card of claim 44 wherein the electrostatic scent release apparatus further comprises:

corona discharge pin for creating corona discharge to ionize scent; and
15 wiring for connecting the corona discharge pin to an external voltage source.

46. The scent-bearing card of claim 45 wherein the cover and electromagnetic mechanism means are coated in epoxy or high voltage insulation materials, wherein the epoxy or high voltage insulation materials protects the cover and electromagnetic mechanism means during corona discharge.

20 47. The scent-bearing card of claim 45 wherein the electrostatic scent release apparatus further comprises:

a grid opposite from the corona discharge pin for attracting ionized scent molecules to assist in the scent release process; and

wiring for connecting the grid to a ground or an external voltage source with a opposite charge to the corona discharge pin.

48. The grid opposite from the corona discharge pin of claim 47 wherein the opposite charged grid further neutralize the ionized scent molecules to assist in the scent release process.

49. The scent-bearing card of claim 45 wherein the electrostatic scent release apparatus further comprises:

a shield surround the corona discharge pin for focusing ionized scent molecules to assist in the scent release process; and

wiring for connecting the shield to a ground or an external voltage source with a same charge as the corona discharge pin.

50. The corona discharge pin for creating corona discharge to ionize scent of claim 45 wherein the discharge pin is constructed with needle or capillary tube.

51. The corona discharge needle or capillary tube of claim 50 wherein the discharge needle or capillary tube is made by conductive materials.

52. The corona discharge needle or capillary tube of claim 50 wherein the discharge needle or capillary tube is made by nonconductive materials.